Standing Orders for Cardiac Resuscitation
by
Emergency Medical Technicians

Tom Rea, MD King County Early Defibrillation Medical Director

SCOPE: Effective January 1, 2005, these orders replace all previous standing orders. These Standing Orders direct the use of both automated and manual external defibrillators operated by currently certified and authorized King County EMS Defibrillation Providers.

PURPOSE: The purpose of these orders is to direct the most effective resuscitation of patients who have confirmed circulatory arrest.

AUTHORIZATION: In the event of a cardiac arrest in King County, Washington, the EMT is authorized to perform the following:

I. Immediately upon arrival, verify respiratory and circulatory arrest by the absence of consciousness, normal respirations and a carotid pulse.

II. Initiate CPR and resuscitation protocols.

III. **ASSESSMENT**: Assess/Analyze the ECG rhythm.

- **A.** Turn the defibrillator power on and begin a verbal report.
- **B.** Immediately attach the defib pads with cables to the patient's chest.
- **C.** Clear patient to Analyze/Assess the patient's rhythm.

IVa. If a **shock** is indicated, immediately charge and deliver a single shock. After the single shock, immediately begin 2 minutes of CPR.(see algorithm)

b. If **no shock** is indicated, immediately begin 2 minutes if CPR.(see algorithm)

V. After 2 minutes of CPR, reanalyze the rhythm

a. If a **shock** is indicated, immediately charge and deliver a single shock. After after a single shock, begin 2 minutes of CPR.

b. If **no shock** is indicated, immediately check pulse. If no pulse, then begin 2 minutes of CPR. If a pulse is detected, then provide other care per algorithm.

VI. Repeat V.

VII. APPENDIX

A. Clinical Guidelines

1. **Non-Cardiac Arrest Patient:** For those departments who wish to use AED's to conduct ECG monitoring an additional training is necessary. This training should emphasize the selection of patients suitable for monitoring; the application of the AED as a cardiac monitor; the recording and basic recognition of important cardiac arrhythmias and the description of these arrhythmias to ALS personnel.

2. **Carotid Pulse Check:** In an unconscious, unresponsive patient, the carotid pulse will always be used to confirm cardiac arrest. Pulse checks should **not** exceed 10 seconds.

3. **Communication:** Verbal communication on the tape is to be ongoing throughout the event. Describe your actions as you do them and resuscitation events as they occur. Allow the recording **to continue throughout the resuscitation or until otherwise directed by the paramedics.**

4. **No Prescribed Period Of Initial CPR:** Upon arrival at the scene and verification of cardiac arrest, the EMT/First Responder shall proceed immediately with the defibrillation protocols outlined in these standing orders (after properly positioning the patient and arranging the working environment, if necessary).

5. **No unnecessary Interruptions of CPR:** The EMT should maximize hands-on CPR. Interruptions in CPR of more than 10 seconds are permitted only during rhythm assessment/analysis and shock delivery. *In particular, do not delay CPR while checking to see if a rhythm is producing a pulse. IF NO PULSE IS FOUND IN 10 SECONDS (UNCONSCIOUS PATIENT), RESUME CPR IMMEDIATELY.*

6. **Blood Pressure Less Than 60 mm Hg:** Any patient found unconscious and unresponsive without adequate respirations and a blood pressure < 60 mm Hg shall have CPR and the AED protocol initiated.

7. **Rapid Analysis/Defibrillation:** The first analysis/shock should be delivered within 60 seconds of the provider's arrival at the patient's side (timed from pulse check). This time is typically started when the patient is determined to be pulseless (i.e. when the EMT is authorized to power the defibrillator and apply to the patient).

8. **Documentation Submittal:** Review of any event in which the defibrillator is attached in cardiac arrest is mandatory. The complete event data must be transmitted to King County EMS within 4 days of the event. Transfer of the event data can be by mail or by electron transfer over an established secure upload. Under no circumstances should event data be transmitted via Email attachment

9. **Once the paramedics arrive at the scene**, EMTs are no longer operating under the standing orders but under the direction of the on scene paramedics or medical control. EMTs should be aware that certain circumstances may dictate that they provide care outside of the standing order protocols as directed by paramedics or medical control.

B. Special Patient and Pediatric Guidelines

1. **Pediatric Arrest:** For children less than 8 years of age, verify cardiac arrest and begin effective CPR. *Do not analyze or shock a cardiac arrest patient who is less than 8 years of age*.

2. **For children 8 years of age and over**: follow adult defibrillation protocols. There are several pediatric patients in King County with their own pediatric AED device. If EMTs encounter one of these patients in cardiac arrest, they are authorized to attach and use the device as needed.

3. **Traumatic Arrest:** Defibrillation is ineffective in traumatic cardiac arrest. If major blood loss/ trauma is obvious, initiate basic life support. If major blood loss/trauma is NOT obvious, approach the patient as usual and initiate defibrillation protocols.

4. **Patients attached to a public access defibrillator (PAD):** If EMTs arrive to find the patient attached to a PAD device, that device should be removed and replaced with the EMTs device and the standing order protocol initiated. This should be accomplished with minimal interruption of CPR.

C. Safety In Defibrillation

1. Everyone, including the defib tech, must be clear of the patient when delivering the shock. The defib tech *must visually and verbally clear the patient prior to the shock.* Clearing of the patient is also required prior to rhythm analysis/assessment. This activity should be accomplished as quickly as possible.

2. Ensure defib pads/paddles are in firm contact with the patient's skin. If necessary, shave excessive hair. If the patient is wet/sweaty, dry the chest before applying pads or defibrillating.

3. Remove any creams, patches and/or ointments from the chest (e.g. nitro patch, paste). Do not take the time to identify which type of cream/ointment/patch is on the patient.
   Use BSI precautions

4. On occasion, some agencies may be required to transport patients. If it is necessary to deliver a shock while transporting a
   patient, the defib tech shall proceed in the following manner:
   a) Bring the vehicle to a complete stop. Assure there is no motion affecting rhythm analysis/assessment.
   b) Assure the safety of all personnel. *Defibrillation hazards increase* in an area of limited space or when metal objects (e.g. stretcher) are close by.

5. Motion detectors on LP 300 defibrillators used within King County have been modified to provide an advisory only prompt. When motion is detected by the LP300, the defib tech shall immediately check the patient, environment, and the patient cable for motion. He/she will immediately eliminate motion when possible. Verbalize the findings of the motion. Proceed with the standing orders at the completion of the motion check.

D. Defibrillators Approved for King County EMS Defib Provider Agencies

[Call King County EMS for specific design and equipment requirements, and recommendations at 206-296-4382]

Heartstart 3000	First Medic 710	FR FR-2	ZOLL 1600
LifePak 300	LifePak 12	MRL-advanced	Zoll M Series

King County Cardiac Resuscitation Procedures

King County Emergency Medical Services
King County, Washington
Revised January 2005

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King County Cardiac Resuscitation Procedures

King County Emergency Medical Services
King County, Washington

1.0 Purpose

The purpose of this document is to outline the components of the King County Cardiac Resuscitation Procedures. These are the minimum requirements for King County Fire and EMS Agencies providing early defibrillation services and electrocardiogram (ECG) monitoring services as Basic Life Support (BLS) first responders dispatched from 911within the King County Emergency Medical Services System.

2.0 Goals and Objectives

The overall goal of the King County EMS Early Defibrillation Procedures is to resuscitate the greatest number of persons from cardiac arrest. The Program reaches this goal by meeting the following Program objectives:

- Provide centralized medical direction and program resources
- Provide clear, concise standing orders while allowing the EMT /FR to utilize sound medical judgment when appropriate
- Conduct consistent, effective, and scenario-based initial defibrillation training
- Provide Instructors with current information and effective training tools with annual refresher training
- Maintain adequate skill levels through consistent, periodic continuing education
- Ensure Program quality improvement through field event quality assurance and continuous program improvement
- Promote the consistent use of well maintained defibrillation equipment

3.0 Authorization and Certification

3.1 Defibrillation by first responders and EMTs is taught as a fundamental skill in basic and CBT curriculums. Proficiency is documented before both initial and renewal of EMT certification.

4.0 Training Requirements

4.1 Initial **AED** Training Requirements-- Defibrillation is taught as part of the basic EMT curriculum requirements required by the State of Washington. This training covers the use of semiautomatic external cardiac defibrillators (AEDs) during resuscitation from cardiac arrest. Those EMTs who use manual defibrillators have additional training requirements.

4.2 Initial **Manual** Defibrillator Training Requirements—For those EMTs who use manual defibrillators, which require visual recognition of shockable rhythms and manual induction of defibrillation, additional training and retraining are required. This training shall include rhythm recording and recognition.

4.3 Initial **ECG Monitoring** Training Requirements

For those departments who wish to use AEDs to conduct ECG monitoring an additional training period is necessary. This period should emphasize the selection of patients suitable for monitoring; the application of the AED as a monitor; the recording and basic recognition of important cardiac arrhythmias and the description of these arrythmias to ALS personnel.

4.4 Instructor Requirements and Authorization

The Defibrillation Coordinator from the KCEMS Division Training Section shall determine eligibility of the instructors for initial training courses. Instructors for all King County EMS defibrillation courses must have completed a Defibrillation Instructor Workshop provided by King County Emergency Medical Services. **Requirements for Defibrillation Instructor eligibility include**:

- At least two years as a certified EMT
- Attend a King County Defibrillation Instructor Workshop at least every 2 years

OR

- Current University of Washington certified Paramedic, Paramedic certified to work in King County.
- Attend a King County Defibrillation Instructor Workshop at least every 2 years.
- Maintain familiarization with AEDs used in King County.

4.5 Competency Based Requirements—**AED** Users

Continued competency depends upon successful demonstration of the following requirements:

- The EMT must a complete a resuscitation skills assessment at least twice during each year. In addition, they will demonstrate a proficient response to at least two scenarios using the application of AED (Twice during each assessment period, for a total of 4 times in a calendar year). These scenarios should include “SHOCK”’ “ NO SHOCK” and troubleshooting requirements. It is suggested that agencies adopt a quarterly (4 times per year) AED training schedule.
- “Hands on” Resuscitation scenarios must be performed on a manikin using CPR, Airway Management, and Defibrillation skills in accordance with currently approved Standing Orders. Review of resuscitation by use of on line instruction is useful but may not be used as a substitute.
- CPR/obstructed airway procedures should be reviewed and a skill’s checklist meeting AHA standards for adult, child and infant completed at least once each calendar year.
- A field cardiac arrest event in which the EMT manages the resuscitation and operates the defibrillator may count as 1 of the semi annual competency training requirements. This field event may only apply to the training period in which it occurs.
- Fire and EMS Agencies may impose additional training requirements if desired.
- Departments are encouraged to include the resuscitation/defibrillation assessment in the skills evaluation done as part of CBT.

4.6 Competency Based Requirements—**Manual** Defibrillator Users
Continued competency depends upon successful maintenance of the following requirements:

- The EMT must complete a resuscitation skills assessment at least four times during each year. Each evaluation will consist of a response to at least two scenarios that must include the application of a manual defibrillator.
- Eight resuscitation scenarios must be performed on a manikin using CPR, Airway Management, and Defibrillation skills in accordance with currently approved Standing Orders. Review of resuscitation by use of on line instruction is useful but may not be used as a substitute.
- CPR/obstructed airway procedures should be reviewed and a skill's checklist meeting AHA standards for adult, child and infant completed at least once each calendar year.
- Fire and EMS Agencies may impose additional training requirements if desired.
- A field cardiac arrest event in which the EMT-manages the resuscitation and operates the defibrillator may count as 1 of the annual training requirements. The field event may only apply to the training period in which it occurs.
- Departments are encouraged to include the resuscitation/defibrillation assessment in the skills evaluation done as part of CBT.

4.7 Competency Based Requirements –ECG Monitoring
For those who perform this skill, ECG Monitoring should be included in a scenario based skills demonstration at least once a year during a CBT resuscitation skills evaluation.

5.0 Field Event Documentation and Reporting

5.1 The following documentation and recording requirements apply to **all cardiac arrest patients** with a BLS response.

All available documentation (from all EMS agencies involved in the incident) should be sent to the EMS Division within four days of the event. An event is defined as any incident where CPR was performed by an EMT or paramedic, whether or not a defibrillator was applied. This includes traumatic CPR, pediatric cases, and cases where no-code status was discovered after CPR was initiated.

5.1.1 Every defibrillator attachment to a patient in cardiac arrest must have a recording by the defibrillator and a MIRF completed.
5.1.2 An email notification message should be generated, immediately following the event and sent to don.cloyd@metrokc.gov.
5.1.3 There are rare exceptions when BLS providers are present at a cardiac arrest and do not use the defibrillator.
- Serious trauma, primarily when the cardiac arrest is believed to be due to major exsanguinating hemorrhage
- Patients with a valid Washington State EMS No CPR bracelet or form or other approved documentation. Or patient who meet the "compelling reasons" definition.

- Patients who experience cardiac arrest after the arrival of Medics
- Patients for whom Medics arrive before the BLS crew can apply the defibrillator.

5.1.4 Even if a defibrillator is not applied, the MIRF should be mailed.

5.1.5 When a defibrillator recording cannot be provided a brief explanation must be included in the MIRF narrative. Examples include: mechanical failure, recorder not turned on, accidental loss, or one of the exceptions listed above.

What documentation to send:

1) MIRF data (from ALL involved EMS agencies)
2) Defibrillator data (when defibrillator was applied)

	Method of Collection	
	Non-electronic	**Electronic**
Medical Incident Report Form (MIRF)	Send copies of the long form	Copies of the short form and computer printout of the incident report
Defibrillator data (when defibrillator was applied)	Send cassette and/or paper tape	Electronic file

All electronic transfer of data shall be thru the established secure server. Under no circumstances should events be transferred via standard Email attachment.

Contact Information: For all questions and comments.

Cardiac Arrest Database	**Defibrillation program coordinator**
Linda Becker, **CASS Coordinator** King County EMS Division 999 Third Ave, Suite 700 Seattle, WA 98104 (206) 296-0206 Email: Linda.Becker@metrokc.gov	**Don Cloyd,** **Defibrillation program Coordinator** King County EMS Division 999 Third Ave, Suite 700 Seattle, WA 98104 (206) 786-1611 Email: don.cloyd@metrokc.gov

5.2 Quality Improvement

Recordings of field resuscitation events shall be reviewed as directed by the Defibrillation Medical Program Director. All cases will be reviewed by the Defibrillation Program Coordinator and a Performance Report completed for each case. The results of this analysis will be returned promptly to the agency of origin. Items included in this report and other performance indicators may be collected and used to identify areas for quality improvement.

6.0 Equipment and Maintenance

6.1 Minimum Defibrillator Design and Operation Requirements

The following is a listing of the minimum design and operation requirements for automated, FDA approved external AED defibrillators used by 911 first responders /EMTs in King County:

- The ability to automatically analyze and detect Ventricular Fibrillation and Fast, Ventricular Tachycardia
- Hands free defibrillation using self adhesive defibrillation pads
- On screen ECG display
- Verbal and on screen prompts and error messages
- Manual operation or override capability
- Cassette tape or similar event recorder approved by King County EMS for recording voice, time, and ECG data.
- Analysis and Shock sequences which are or can be programmed to be consistent with King County Defibrillation Standing Orders
- Recording method for information required by KCEMS Field Event Documentation.
- AEDs used in ECG monitoring must provide a paper recording of ECG rhythms.
- Successful transfer to EMS of required data from a test case.

6.2 Manual Defibrillators

These devices must be FDA approved and meet the requirements of 6.1

6.3 Maintenance, Testing, and Record Keeping

All semi-automated and manual defibrillators used by Fire and EMS Agencies shall be maintained in a fully operational condition in accordance with the recommendations of the manufacturer. Although defibrillator malfunctions are uncommon, frequent operational checks are necessary to ensure proper functioning. Batteries are the most common source of failure when the defibrillator fails to deliver a shock. Agencies should follow manufacturer's recommendations regarding battery conditioning and charging schedules.

Agencies shall also perform an operational inspection and function test of each defibrillator. In addition to a visual inspection, a functional test-using manufacturer recommended equipment must be performed (e.g. simulate VF, ensure a shock is advised and deliver a detectable shock to the simulator/tester). Records of inspections and functional tests must be maintained by the Agency.

Revisions and Comments

Please address all comments and requests for revisions to:

Don Cloyd
Defibrillation Program Coordinator
Or The Defibrillation Medical Program Director
King County Emergency Medical Services
999 3rd Avenue, Suite 700
Seattle, WA 98104
206-296-4693

King County Emergency Medical Services Algorithm
For Manual/AED Cardiac Resuscitation

1. Assess ABCs. If not breathing, open airway & begin ventilations. If no pulse…..
2. Perform effective CPR until defibrillator is attached. Begin verbal report
3. Clear the patient.
4. Analyze the rhythm.

Shock Indicated (VF or VT)
Deliver SINGLE Shock.
Then immediately begin CPR
Perform 2 minutes of uninterrupted CPR

Do not delay CPR for pulse check or post-shock rhythm analysis

No Shock Indicated
Immediately begin CPR
Perform 2 minutes of uninterrupted CPR

Do not delay CPR for pulse check

After 2 minutes of CPR,
Analyze rhythm

Do not check pulse before analyzing rhythm

Shock Indicated (VF or VT)
Deliver SINGLE Shock.
Then immediately begin CPR
Perform 2 minutes of uninterrupted CPR

Do not delay CPR for pulse check or post-shock rhythm analysis.

No Shock Indicated
Check Pulse[C]
If pulse, assess airway, breathing, and blood pressure[D]
If no pulse, perform 2 minutes of uninterrupted CPR

After 2 minutes of CPR,
Analyze rhythm

Do not check pulse before analyzing rhythm

Shock Indicated (VF or VT)
Deliver SINGLE Shock.
Then immediately begin CPR
Perform 2 minutes of uninterrupted CPR

Do not delay CPR for pulse check or post-shock rhythm analysis

No Shock Indicated
Check Pulse[C]
If pulse, assess airway, breathing, and blood pressure[D]
If no pulse, perform 2 minutes of uninterrupted CPR

After 2 minutes of CPR,
Analyze rhythm

Do not check pulse before analyzing rhythm

Notes:

A. Shockable rhythm is defined as VF or unconscious/pulseless VT.

B. Periods of CPR should not be interrupted except in cases of need to manage airway (emesis, etc.)

C. For manual departments, check pulse only if organized rhythm. Start CPR if no pulse or asystole rhythm.

D. Any patient found unconscious, unresponsive with a systolic BP <60 should have CPR initiated. If a pulse is detected during resuscitation but systolic blood pressure < 60, resume CPR.

E. If at anytime 3 consecutive “no shocks” are advised, continue CPR without interruption until medics arrive.

F. Count out loud for chest compressions.